

IN THE SPECIFICATION

Please replace the paragraph at page 27, lines 14 to 23, with the following rewritten paragraph:

Next, the sixth embodiment will be described with reference to Figures 18 and 27. This embodiment uses a component mounting apparatus composed of the two board transfer devices 10a, 10b, the two component supply devices 45a, 45b and the component placing device 40 including one or the two component placing heads 43a, 43b. Of the two board transfer devices 10a, 10b, one of them is set or assigned as regular type product transfer device exclusively used for transferring boards for the regular type products, and the other of them is set or assigned as interruption or brake-in ~~unscheduled~~ product transfer device used primarily for transferring boards for interruption or brake-in ~~unscheduled~~ products which are different in board width from those for the regular type products.

Please replace the paragraph at page 27, line 24 to page 28, line 4, with the following rewritten paragraph:

In the course of the production according to a schedule that a plurality of the type-A products are to be produced, a command to produce the type-B products on an urgent, brake-in ~~in unscheduled~~ basis may be input to the controller 60 from the host computer. In such a case, if the both of the board transfer devices 10a, 10b which have been arranged for the regular type products were rearranged for the brake-in ~~unscheduled~~ products, much loss time would be taken to make the rearrangement. In particular, where the number of the brake-in ~~unscheduled~~ products to be produced is small, the loss time would become much larger if both of the board transfer devices 10a, 10b were rearranged at the same time.

Please replace the paragraph at page 28, lines 5 to 25, with the following rewritten paragraph:

In this particular embodiment, in order to reduce the time taken to make the rearrangement, one of the board transfer devices 10a (or 10b) is assigned as regular type product transfer device used exclusively for transferring the boards for the regular type products, while the other transfer device 10b (or 10a) is assigned as brake-in ~~unscheduled~~ product transfer device for primarily transferring the boards for the brake-in ~~unscheduled~~ products which are different in board width from those for the regular type products. As setting means for making this assignment, for example, the memory unit 63 is provided with setting areas which correspond respectively to the board transfer devices 10a, 10b. When a selected one of the board transfer devices is to be assigned as the regular type product transfer device, numeral "1" is set in the setting area associated thereto, or when it is to be assigned as the brake-in ~~unscheduled~~ product transfer device, numeral "0" is set therein. For example, where the board transfer devices 10a and 10b are to be assigned respectively as the regular type product transfer device and the brake-in ~~unscheduled~~ product transfer device, numerals "1" and "0" are input from the input unit 64 of the controller 60 to the setting areas of the memory unit 63 respectively associated with the board transfer devices 10a, 10b. And, the feeders retaining the components for the regular type products are exclusively set in the component supply device 45a at the side of the board transfer device 10a, while vacant slots prepared for use in setting the feeders retaining the components for the brake-in ~~unscheduled~~ products are left in the components supply device 45b at the side of the board transfer device 10b.

Please replace the paragraph at page 28, line 26 to page 29, line 26, with the following rewritten paragraph:

When a command for production of the brake-in unscheduled products (i.e., type-B products) is input from the host computer to the controller 60 (Step 132 in Figure 27) in the course of the ordinary production wherein the boards for the regular type products (i.e., type-A boards) are transferred on both of the board transfer devices 10a, 10b and wherein the regular type products (i.e., type-A products) are under the ordinary production at the both of the board transfer devices 10a, 10b (Step 131), the board transfer device 10b prepared for the brake-in unscheduled products stops loading a successive type-A board and performs the processing to discharge the type-A board now thereon. (Step 133) The mounting program for mounting the components on the board transferred by the board transfer device 10b to the component mounting position is changed from a type-A product mounting program to a type-B product mounting program. (Step 134) Then, the transfer way width of the board transfer device 10b in a direction perpendicular to the transfer direction is altered to meet a rail-to-rail width corresponding to the type-B boards. (Step 135) Thereafter, it is judged whether or not, the component mountings on the type-A boards at the board transfer device 10a and the component mountings on the type-B boards at the board transfer device 10b cause the interference between the component placing heads 43a, 43b so that such simultaneous mountings are impossible. (Step 136) If possible, the component mountings on the type-A boards at the board transfer device 10a and the component mountings on the type-B boards at the board transfer device 10b are carried out simultaneously. (Step 137) Where the simultaneous productions are impossible, on the contrary, the component mountings at the board transfer device 10a are halted, during which time the component mountings on the type-B boards are carried out at the board transfer device 10b until the number of the type-B boards reaches a commanded number. (Step 138) When the component mountings on the type-B boards of the commanded number are completed (Step 139), the board transfer device

10a is restored to the production for the type-A products, and the type-A products are produced as ordinary on both of the board transfer devices 10a, 10b.

Please replace the paragraph at page 30, line 25 to page 32, line 10, with the following rewritten paragraph:

As shown in Figure 19 for example, it is now assumed that the board transfer device 10a has been set as the regular type product transfer device, while the board transfer device 10b has been set as the brake-in ~~unscheduled~~ product transfer device and that one-side production is being performed wherein the full-scale basis production of the first regular type products is carried out on the first regular type boards (type-A boards) at the board transfer device 10a, while no component mounting operation is being carried out at the board transfer device 10b. It is further assumed that another one-side production is further commanded for performing component mountings on the boards (type-B boards) for the second regular type products while the preceding one-side production is being carried out for component mountings on the first regular type boards (type-A boards) at the board transfer device 10a. In this case, there is set a mounting program for performing component mounting operations on the type-B boards at the board transfer device 10b, and the rail-to-rail width of the board transfer device 10b is adjusted or altered to correspond to the type-B boards. Thus, the full-scale basis mountings of components are performed on the type-A boards at the board transfer device 10a, and the trial basis mountings of components are performed on the type-B boards at the board transfer device 10b. Where the change from the first regular type products to the second regular type products has been determined in dependence upon the production schedule, the timing when the trial basis component mountings are to be started is determined taking into account the progress in production of the first regular type products, the time period for the trial basis production of one or several second regular products and the

time period necessary for inspection and reworking on the one or several products produced on the trial basis. Where the change to the second regular type products is suddenly instructed, the trial basis component mountings on the boards for the second regular type products are started at the time point at which the change command is given. The type-B boards (one or several) with components mounted thereon are unloaded from the board transfer device 10b and are inspected. The inspection is carried out with respect to such items as mounting position, wrong components, setting error of feeders, mounting position accuracy and so on. If any problem arises as a result of the inspection, modifications concerning such faulty items are made for the adjustment in component mountings on the type-B boards at the board transfer device 10b, the change in the set feeders and the like. After the problems are all solved, the component mountings on the type-B boards are started on the full-scale basis at the board transfer device 10b, and the component mountings on the type-A boards at the board transfer device 10a are terminated when the type-A products of a scheduled number are attained. Thereafter, in order that the setting change is performed to set the board transfer device 10b as the regular type product transfer device and the board transfer device 10a as the brake-in ~~unscheduled~~ product transfer device, numerals "1" and "0" are input from the input device 64 respectively to the setting areas for the board transfer devices 10a, 10b of the memory unit 63 of the controller 60.

Please replace the paragraph at page 32, line 11 to page 33, line 10, with the following rewritten paragraph:

It is now assumed that as shown in Figure 20, the both-side productions are being performed to mount components on the boards (type-A boards) for the first regular type products at both of the board transfer device 10a, 10b on a full-scale basis wherein the board transfer device 10a has been set as the regular type product transfer device while the board

transfer device 10b has been set as the brake-in ~~unscheduled~~ product transfer device. When in this state, another both-side production command is given for mounting components on the boards (type-B boards) for the second type products on a full-scale basis, the board transfer device 10b stops loading a further type-A board thereto and unloads the type-A board remaining thereon immediately or upon completion of the mountings of all the components ~~therefor~~ therefore in order that the trial basis mountings of components on the type-B boards can be done at the board transfer device 10b. Then, the mounting program for component mountings at the board transfer device 10b is changed from the mounting program for the type-A boards to that for the type-B boards, and the rail-to-rail width of the board transfer device 10b is adjusted to correspond to the type-B boards. Thus, the component mounting operations are carried out on the type-A boards at the board transfer device 10a on the full-scale basis and on the type-B boards at the board transfer device 10b on the trial basis. One or several type-B boards each with components mounted thereon are unloaded from the board transfer device 10b and are inspected. If any problem arises as a result of the inspection, modifications are made concerning the faulty items, and thereafter, the component mountings are carried out on the type-B boards at the board transfer device 10b on the full-scale basis. In due course, the type-A boards with the components mounted at the board transfer device 10a reach the scheduled number, and then, the component mountings of the type-B boards on the trial basis are performed at the board transfer device 10a in the same manner as done at the board transfer device 10b. Subsequently, the component mountings on the type-B boards on the full-scale basis are started after any problem is found out and solved.

Please replace the paragraph at page 46, line 27 to page 47, line 9, with the following rewritten paragraph:

In the embodiment exemplified in Figures 18 and 27 for example, of the two board transfer devices 10a, 10b, one of them 10a is set as regular type product transfer device for transferring the boards for the regular type products, while the other transfer device 10b is set as brake-in ~~unscheduled~~ product transfer device for transferring the boards for interruption or brake-in ~~unscheduled~~ products which are different in board width from the regular type products. Thus, when a production command for the brake-in ~~unscheduled~~ products is given during the production of the regular type products, the other board transfer device 10b only can be prepared for the brake-in ~~unscheduled~~ products, so that the rearrangement or preparation of the other board transfer device 10b for the production of the brake-in ~~unscheduled~~ products can be done in a short time period at a low cost.

Please replace the paragraph at page 47, lines 10 to 26, with the following rewritten paragraph:

In the embodiment described with reference to Figures 20 and 27, where the regular type product in production is to be changed from the first regular type product (type-A) to the second type product (type-B), a trial basis production of the second type product (type-B) is performed at the other transfer device 10b which has been set for the brake-in ~~unscheduled~~ products, while the component mountings are being continued at one of the transfer devices 10a. And, if the trial basis production does not give rise to any problem, the other board transfer device 10b is set as the regular type product transfer device, and the component mountings on the boards for the second type products (type-B) are then performed on a full-scale basis, in connection with which a setting alteration is executed to set the one board transfer device 10a as the brake-in ~~unscheduled~~ product transfer device. In this way, any

problem accompanied by the production of the second type products (type-B) can be extracted prior to the full-scale basis production thereof and without discontinuing the production operation by the component mounting apparatus. Therefore, the occurrence of poor quality after the starting of the full-scale basis production can be obviated, so that the change of the products from a certain type of products to another type of products can be made smoothly.

Please replace the paragraph at page 50, line 15 to page 51, line 13, with the following rewritten paragraph:

In the embodiment exemplified in Figures 18 and 27 for example, of the two board transfer devices 10a, 10b, one of them 10a is set as regular type product transfer device for transferring the boards only for the regular type products (type-A), while the other transfer device 10b is set as brake-in ~~unscheduled~~ product transfer device for transferring the boards for brake-in ~~unscheduled~~ products (type-B) which are different in the board width from the regular type products (type-A). The program for controlling the operation of the component mounting apparatus which has been so set is provided to be designed to control the apparatus in such a way that in response to a production command for brake-in ~~unscheduled~~ products of a certain type (type-B) other than the regular type products (type-A), the other board transfer device 10b is operated to unload the board for the regular type products (type-A) therefrom while preventing another board for the regular type products (type-A) from being loaded thereto, a mounting program for controlling the mounting operations at the other board transfer device 10b is changed to another mounting program corresponding to the brake-in ~~unscheduled~~ products of the certain type (type-B), the other board transfer device 10b is adjusted to have a rail-to-rail width corresponding to the brake-in ~~unscheduled~~ products of the certain type (type-B), and the boards for the brake-in ~~unscheduled~~ products of the certain



type (type-B) are successively loaded onto the other board transfer device 10b to have components mounted thereon. Thus, when the command for the production of the brake-in ~~unscheduled~~ products (type-B) is given during the production of the regular type products (type-A), both the two board transfer devices 10a, 10b are not required to be rearranged or prepared immediately, and instead, only the board transfer device 10b set for the brake-in ~~unscheduled~~ products (type-B) can be rearranged or prepared for the brake-in ~~unscheduled~~ products (type-B) without being thrown into the state of disorder. This advantageously makes it possible to perform the rearrangement or preparation of the transfer device within a short time period and at low cost.

Please replace the paragraph at page 51, line 14 to page 52, line 10, with the following rewritten paragraph:

In the embodiment exemplified in Figures 18 and 19 for example, the program for controlling the operation of the component mounting apparatus is provided to be designed to control the apparatus as follows. That is, where the regular type product in production is to be changed from the first regular type product (type-A) to the second type product (type-B), a trial basis production of the second type product (type-B) is performed at the other transfer device 10b which has been set for the brake-in ~~unscheduled~~ products, while the component mountings are being continued at one of the transfer devices 10a. And, if the trial basis production does not give rise to any problem, the other board transfer device 10b is set for the regular type products, and the component mountings on the boards for the second type products (type-B) are then performed on a full-scale basis, in connection with which a setting alteration is executed to set the one board transfer device 10a as the brake-in ~~unscheduled~~ product transfer device. According to the program, when the command for the production of the brake-in ~~unscheduled~~ products (type-B) is given during the production of the regular type

products (type-A), both the two board transfer devices 10a, 10b are not required to be rearranged or prepared immediately, and instead, only the board transfer device 10b set for the brake-in ~~unscheduled~~ products (type-B) can be rearranged or prepared for the brake-in ~~unscheduled~~ products (type-B) without being thrown into the state of disorder. In this way, any problem accompanied by the production of the second type products can be extracted prior to the full-scale basis production thereof without discontinuing the production operation by the component mounting apparatus. Therefore, the occurrence of poor quality after the starting of the full-scale basis production can be obviated, so that the change of the products from a certain kind of products to another kind of products can be made smoothly.